Appendix B : 37 C.F.R. 1.132 Declaration titled "Variable half-life of metastable Indium 115m after photoactivation using a 6 MeV cLINAC".

The following appendix is a declaration section 37 C.F.R. 1.132

I, Robert DESBRANDES, declare that I am warned that willful false statements and the likes are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon.

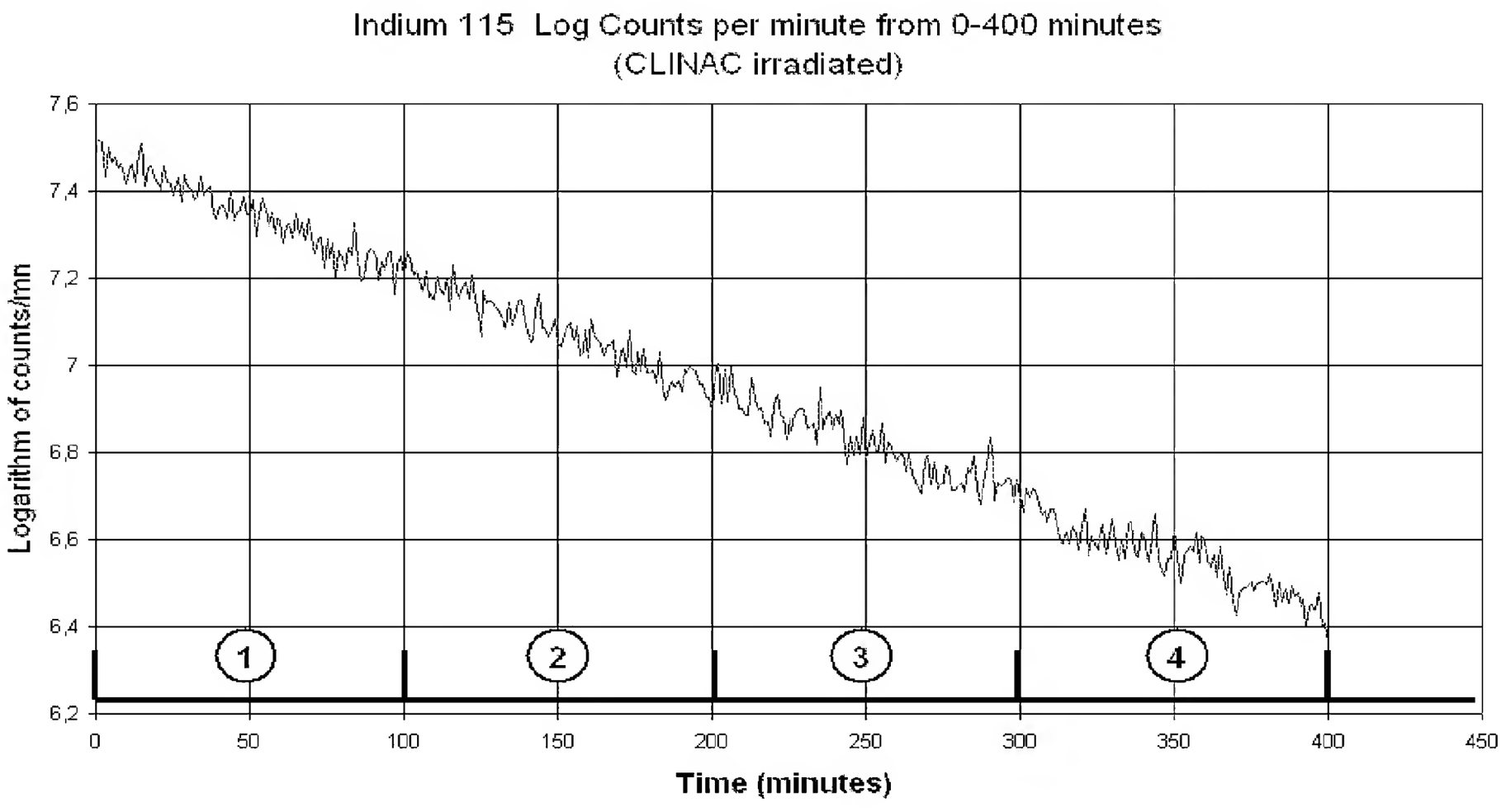
I declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true.

Robert DESBRANDES
S-Signed: /Robert DESBRANDES/
Original submitted with my USPTO efiling electronic signature.

The measurements were carried out in Louisiana State University, Baton Rouge, Louisiana on November 8th, 2003:

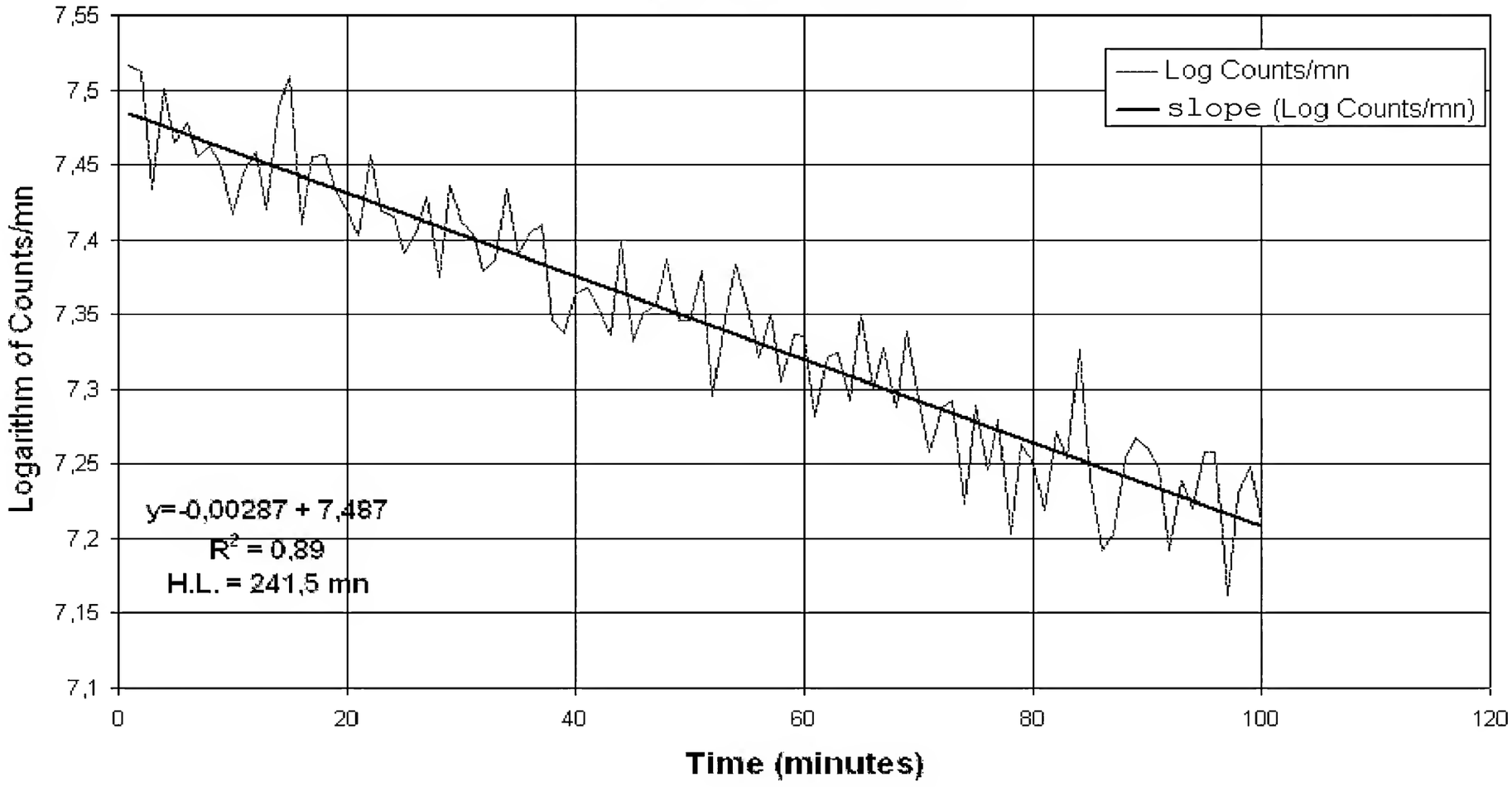
- The irradiation of the Indium foil with a 6 MeV cLINAC was operated by a technician at the veterinary School of LSU, witnessed by me, and Professor Daniel Lee Van Gent.
- I, and Professor Daniel Lee VAN GENT, have been operating the gamma spectrometer which was a Canberra high purity intrinsic Germanium gamma counting system enclosed in an Orthec low level background shield made of lead, copper and steel;
- I interpreted the data reported in the following pages.

The Indium 115 samples used in the experiments were:
25 mm wide, 75 mm long, 0.3 mm thick.
The abundance of In 115 was 95.72%, purity 99.99%.
The CLINAC accelerator was a medical type instrument.
The samples were irradiated to 20 Gray at the rate of 0.01 Gray per second during several lapses of time.
The gamma head of CLINAC was located one meter above the table on which the samples were led.
The beam was collimated in such a way that the field was the size of our samples.
The following graph is the recording of the counts per minute emitted at 336 keV by the excited isomer nuclide: Indium 115^{m}.

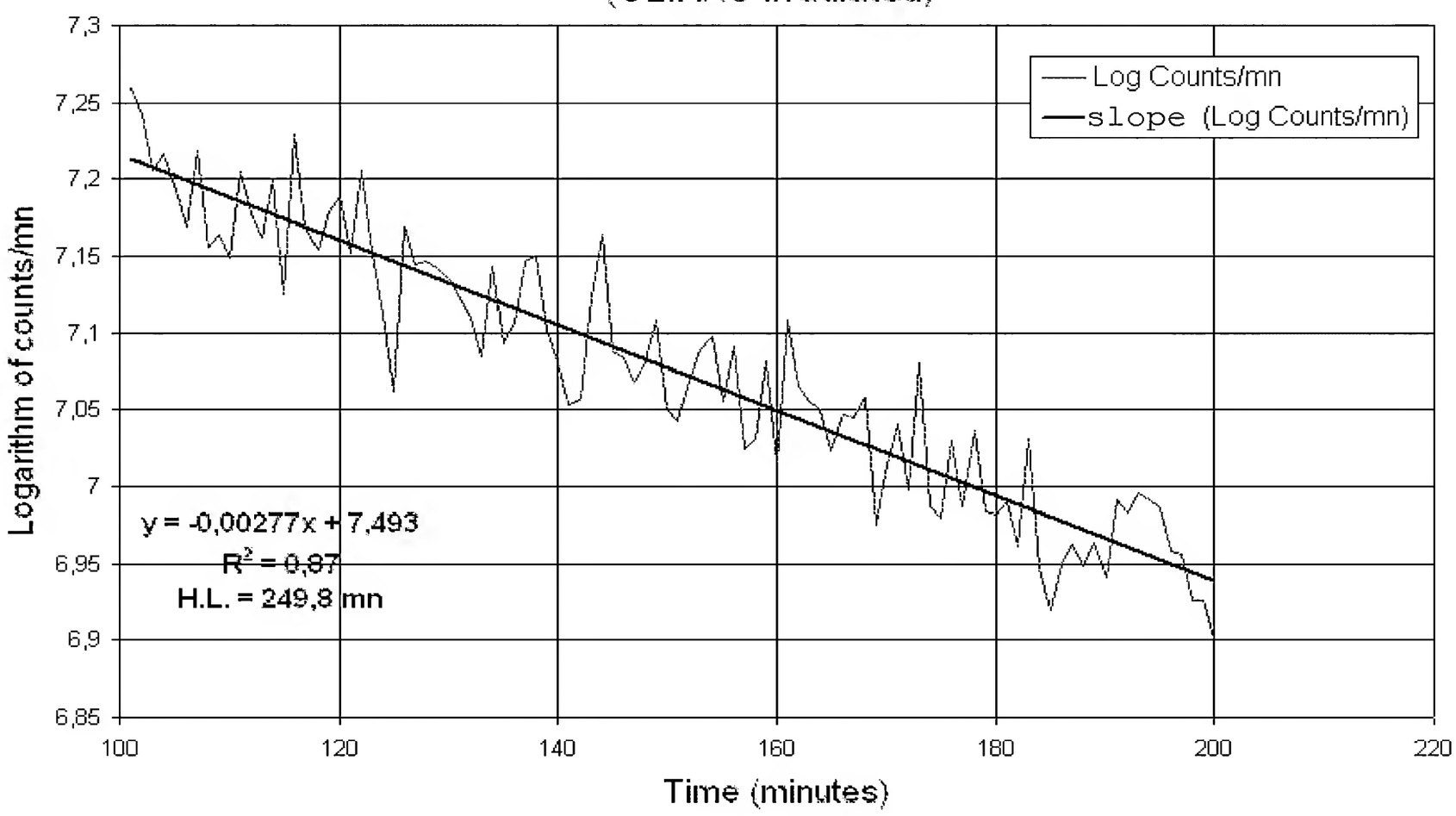


The variable half-life is computed over intervals of 100 minutes:
The following graphs display the logarithm of the deexcitation gamma rays counts per minutes of the "entangled sample" product.
A linear regression equation is used to compute the slope and the regression coefficient (R^2). The variable half-life (H.L.) is noted λ and the slope is noted P (probability of deexcitation per minute) in the equation of paragraph [0002] which are all well known to the one skilled in the art.

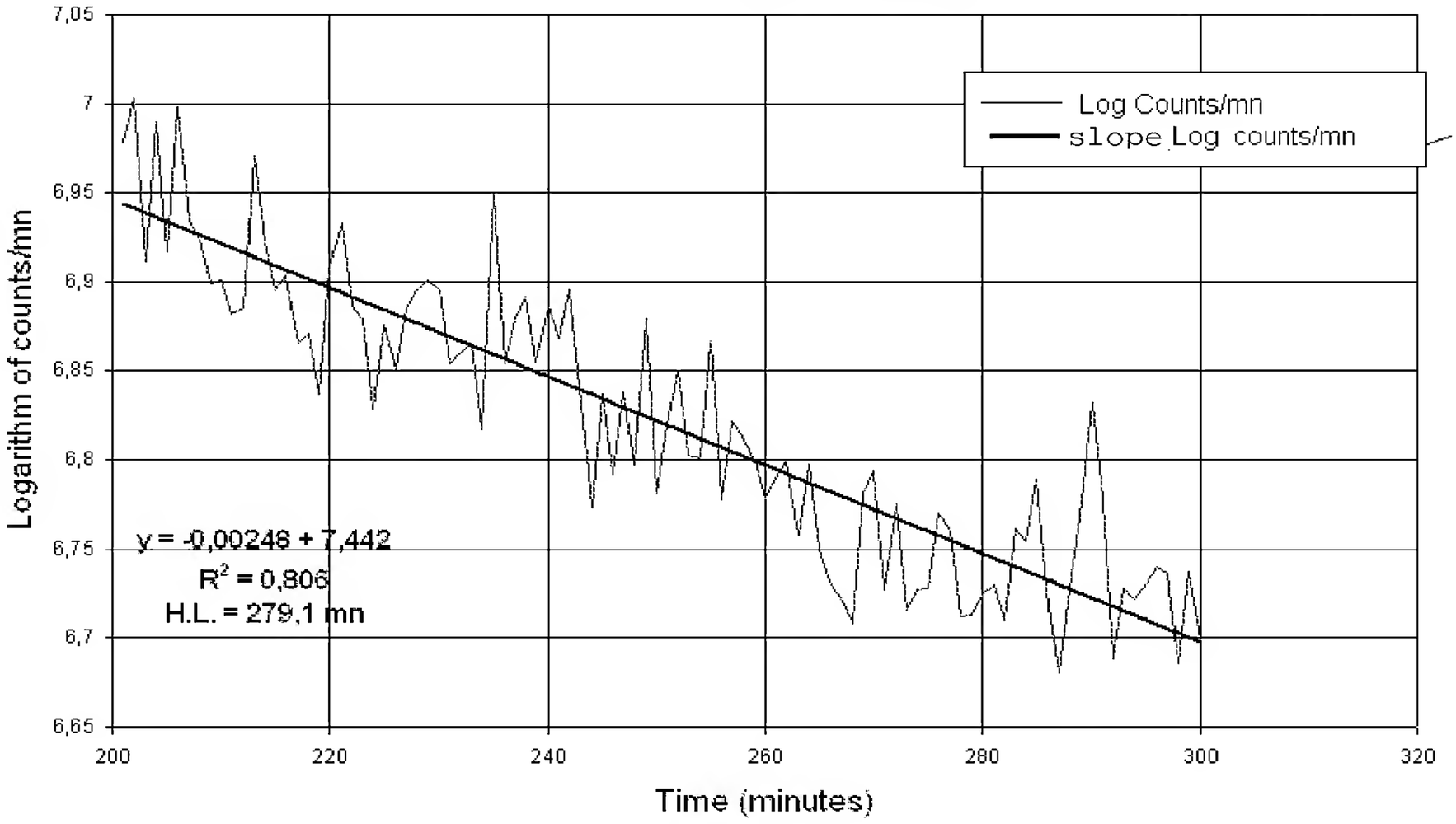
1 Indium 115 Log Counts per minute from 0-100 minutes
(CLINAC irradiated)



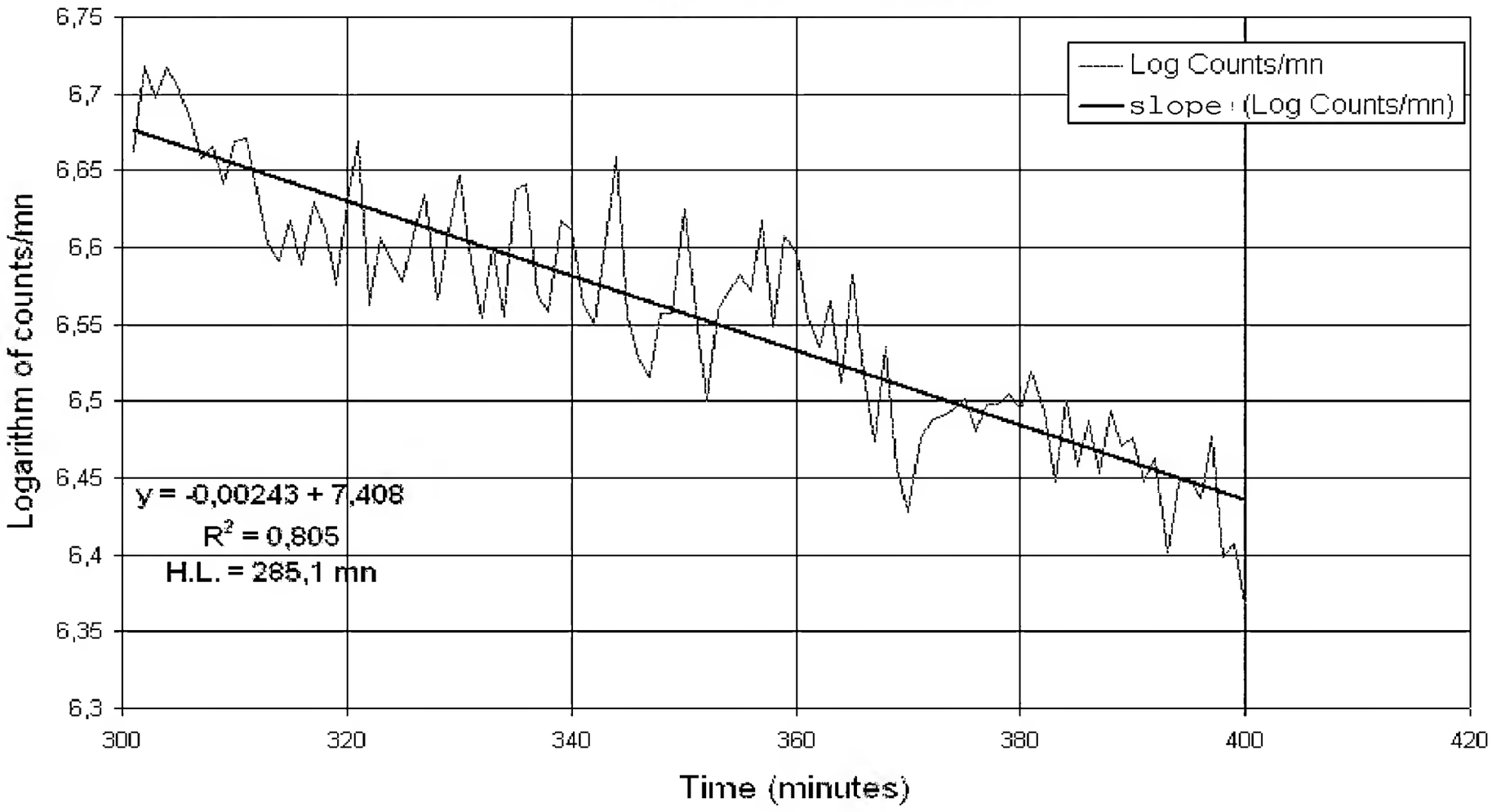
2 Indium 115 Log Counts per minute from 100-200 minutes
(CLINAC irradiated)

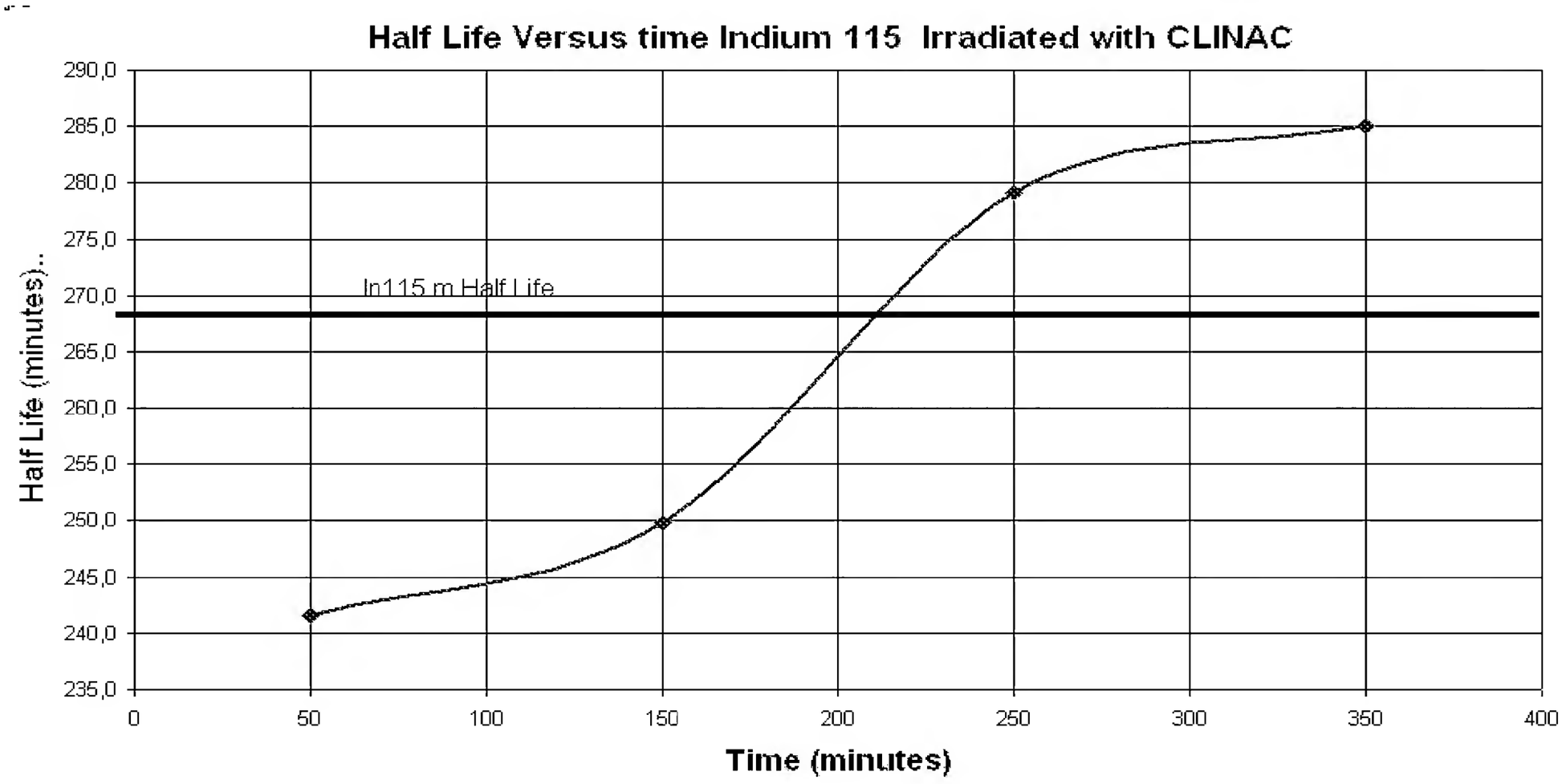


3 Indium 115 Log Counts per minute from 200-300 minutes
(CLINAC irradiated)



4 Indium 115 Log Counts per minute from 300-400 minutes
(CLINAC irradiated)




Half Life Versus time Indium 115 Irradiated with CLINAC
290,0
285,0
280,0
275,0
270,0
265,0
260,0
255,0
250,0
245,0
240,0
235,0
In115 m Half Life
Half Life (minutes)..
0
50
100
150
200
250
300
350
400
Time (minutes)

Measurement data:

min	Counts	LN Counts
1	1839	7,516944598
2	1831	7,512355358
3	1693	7,434038811
4	1809	7,500789264
5	1746	7,465260269
6	1768	7,477841772
7	1728	7,454962975
8	1743	7,4634491
9	1718	7,448852073
10	1664	7,417105815
11	1712	7,445166357
12	1735	7,458607061
13	1668	7,41963235
14	1787	7,48849495
15	1825	7,509477722
16	1654	7,410758386
17	1728	7,454962975
18	1732	7,45678379
19	1693	7,434038811
20	1667	7,418996816
21	1640	7,402451521
22	1732	7,45678379
23	1667	7,418996816
24	1662	7,415837142
25	1621	7,390829366
26	1644	7,405015305
27	1684	7,42905189
28	1596	7,375117924
29	1696	7,435898091
30	1655	7,411393133
31	1642	7,403731189
32	1602	7,379070548
33	1614	7,386272564
34	1693	7,434038811
35	1619	7,389526893
36	1643	7,40437041
37	1654	7,410758386
38	1549	7,345668216
39	1537	7,337483639
40	1578	7,36384379
41	1583	7,367171812
42	1564	7,355136183
43	1535	7,336109749
44	1634	7,398590418
45	1528	7,331989801
46	1558	7,351087621

47	1567	7,357147954
48	1614	7,386272564
49	1551	7,346345638
50	1549	7,345668216
51	1603	7,379725723
52	1474	7,295517953
53	1552	7,3470226
54	1609	7,383660211
55	1564	7,355136183
56	1512	7,320904125
57	1556	7,349732307
58	1487	7,304758015
59	1535	7,336109749
60	1533	7,334740493
61	1453	7,281130986
62	1512	7,320904125
63	1517	7,324384502
64	1469	7,292657071
65	1556	7,349732307
66	1480	7,299797367
67	1522	7,327846239
68	1462	7,287629037
69	1538	7,338166626
70	1469	7,292657071
71	1419	7,257665393
72	1463	7,288346925
73	1468	7,291942272
74	1372	7,223711348
75	1464	7,289071127
76	1402	7,245726392
77	1449	7,278953251
78	1344	7,203561759
79	1427	7,263581863
80	1408	7,250223788
81	1365	7,219100166
82	1439	7,27166201
83	1413	7,253208494
84	1520	7,326465614
85	1396	7,241208678
86	1329	7,192535646
87	1342	7,20199083
88	1414	7,253951512
89	1433	7,267267195
90	1422	7,259889931
91	1404	7,247230146
92	1329	7,192535646
93	1392	7,238187885
94	1367	7,220637152
95	1419	7,257665393

96	1420	7,258412151
97	1289	7,16198656
98	1380	7,229838778
99	1406	7,248724532
100	1355	7,211357451
101	1421	7,259151314
102	1397	7,241967822
103	1347	7,205902401
104	1362	7,216782905
105	1334	7,195697318
106	1299	7,169303826
107	1364	7,218330785
108	1281	7,155435333
109	1293	7,164434182
110	1273	7,148840904
111	1345	7,204342582
112	1309	7,177377754
113	1289	7,16198656
114	1339	7,199633535
115	1243	7,12540376
116	1379	7,229070367
117	1298	7,168495148
118	1280	7,154615357
119	1312	7,178980172
120	1324	7,188571334
121	1277	7,152143555
122	1347	7,205902401
123	1277	7,152143555
124	1226	7,111764939
125	1167	7,062500068
126	1299	7,169303826
127	1267	7,144691276
128	1271	7,147181544
129	1265	7,143032914
130	1255	7,134675689
131	1240	7,122866659
132	1223	7,109184777
133	1194	7,084796251
134	1266	7,143862438
135	1203	7,092698396
136	1219	7,105736908
137	1269	7,14635477
138	1275	7,15048967
139	1215	7,102277109
140	1189	7,081263109
141	1157	7,053447429
142	1161	7,057080047
143	1240	7,122866659
144	1293	7,164434182

145	1197	7,087440029
146	1193	7,083916231
147	1174	7,067899391
148	1189	7,081263109
149	1222	7,108325969
150	1154	7,050712112
151	1145	7,043386964
152	1175	7,068793613
153	1199	7,089193112
154	1208	7,097069
155	1159	7,055261073
156	1201	7,090951453
157	1124	7,024835846
158	1132	7,031361328
159	1189	7,081263109
160	1114	7,015425126
161	1222	7,108325969
162	1171	7,065203374
163	1159	7,055261073
164	1154	7,050712112
165	1123	7,023892517
166	1149	7,047056246
167	1147	7,04521893
168	1162	7,057983992
169	1069	6,974918478
170	1112	7,013528709
171	1142	7,040623952
172	1095	6,998263037
173	1188	7,080379973
174	1082	6,986658877
175	1075	6,979824746
176	1129	7,029503775
177	1082	6,986658877
178	1137	7,036007763
179	1079	6,983734357
180	1077	6,981786105
181	1086	6,990541911
182	1055	6,961040089
183	1132	7,031361328
184	1040	6,946975992
185	1012	6,919258858
186	1043	6,950000261
187	1056	6,962035109
188	1042	6,948993187
189	1057	6,963038603
190	1034	6,940880529
191	1087	6,991508019
192	1078	6,982760705
193	1092	6,995372306

194	1087	6,991508019
195	1081	6,98568807
196	1052	6,958039564
197	1049	6,956040554
198	1019	6,92651815
199	1019	6,92651815
200	994	6,901415223
201	1073	6,977868856
202	1100	7,003065459
203	1004	6,911956442
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210	993	6,900357986
211	975	6,88216051
212	978	6,885397189
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215	987	6,895034715
216	996	6,90352635
217	959	6,865828508
218	964	6,871309113
219	932	6,836871335
220	1000	6,907755279
221	1025	6,932701518
222	979	6,886470354
223	972	6,87891332
224	924	6,828939319
225	968	6,875665877
226	945	6,851460022
227	978	6,885397189
228	987	6,895034715
229	993	6,900357986
230	987	6,895034715
231	947	6,853679169
232	954	6,860328185
233	959	6,865828508
234	914	6,817480401
235	1043	6,950000261
236	947	6,853679169
237	972	6,87891332
238	984	6,891839289
239	948	6,854797442
240	979	6,886470354
241	961	6,868026437
242	987	6,895034715

243	936	6,841380406
244	874	6,772714176
245	932	6,836871335
246	891	6,791805562
247	933	6,838008552
248	896	6,797694847
249	972	6,87891332
250	881	6,781114378
251	916	6,819776161
252	944	6,850348599
253	900	6,802394763
254	899	6,801216291
255	960	6,866933284
256	878	6,777521301
257	918	6,822077558
258	908	6,811706827
259	897	6,798877474
260	879	6,778716636
261	889	6,79062578
262	897	6,798877474
263	861	6,758152575
264	896	6,797694847
265	854	6,749556416
266	839	6,73213919
267	829	6,720786943
268	819	6,708010821
269	881	6,781114378
270	893	6,794172161
271	835	6,727108319
272	876	6,775114918
273	825	6,715698488
274	835	6,727108319
275	836	6,728365421
276	872	6,770296183
277	863	6,760588488
278	822	6,711862042
279	823	6,713138444
280	833	6,724589366
281	837	6,729632893
282	821	6,710584009
283	864	6,761815795
284	858	6,754475886
285	888	6,789444604
286	826	6,716970006
287	797	6,680653906
288	836	6,728365421
289	869	6,767883831
290	927	6,83234184
291	878	6,777521301

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293	836	6,728365421
294	831	6,722052011
295	838	6,730886827
296	845	6,739644272
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299	843	6,737144878
300	812	6,698970643
301	782	6,66198261
302	827	6,718239909
303	811	6,697676017
304	826	6,716970006
305	817	6,705443237
306	799	6,683285849
307	779	6,657934021
308	785	6,666014873
309	766	6,641586788
310	787	6,668685577
311	789	6,671361834
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314	728	6,590877805
315	748	6,617964318
316	727	6,589421541
317	757	6,62915187
318	744	6,612323253
319	718	6,576316354
320	757	6,62915187
321	787	6,668685577
322	708	6,563037138
323	740	6,606650186
324	728	6,590877805
325	719	6,577777905
326	741	6,608068099
327	761	6,634699059
328	711	6,565997096
329	743	6,610897909
330	771	6,647065612
331	728	6,590877805
332	702	6,554075844
333	735	6,599503085
334	703	6,55557024
335	763	6,637454604
336	766	6,641586788
337	713	6,568962352
338	705	6,558566529
339	748	6,617964318
340	743	6,610897909

341	708	6,563037138
342	700	6,551080335
343	737	6,602370772
344	780	6,65929392
345	703	6,55557024
346	684	6,528264888
347	676	6,515867579
348	704	6,557076607
349	704	6,557076607
350	754	6,624967875
351	705	6,558566529
352	665	6,500177942
353	705	6,558566529
354	715	6,571904849
355	722	6,582163633
356	715	6,571904849
357	748	6,617964318
358	698	6,548061497
359	741	6,608068099
360	732	6,59519291
361	702	6,554075844
362	689	6,535923186
363	709	6,564518212
364	674	6,512755221
365	722	6,582163633
366	677	6,517434908
367	648	6,474538635
368	689	6,535923186
369	637	6,456518447
370	619	6,428008337
371	649	6,476156646
372	657	6,487440458
373	659	6,490632483
374	662	6,495416602
375	666	6,501755028
376	653	6,481010353
377	664	6,498598365
378	664	6,498598365
379	668	6,504916718
380	662	6,495416602
381	678	6,518985033
382	661	6,49382948
383	632	6,448208783
384	665	6,500177942
385	638	6,458165855
386	657	6,487440458
387	635	6,453199712
388	661	6,49382948
389	646	6,471279265

390	649	6,476156646
391	632	6,448208783
392	641	6,463107457
393	603	6,402165922
394	631	6,446544876
395	633	6,449885733
396	624	6,43648685
397	651	6,477772043
398	601	6,398678126
399	606	6,407391406
400	582	6,366642254